Abstract

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0.1 Augmented Matrices

This:

$$\{x_1 - 2x_2 + x_3 = 02x_2 - 8x_3 = 7 \tag{1}$$

Becomes:

$$\left(\begin{array}{ccc|c} 1 & -2 & 1 & 0 \\ 0 & 2 & -8 & 7 \end{array}\right)$$

A linear system is **consistent** if it has at least one solution. Two matrices are **row equivalent** if a sequence of row operations transforms one matrix into the other.

[[Pasted image 20230822082952.png]] A and B are row equivalent A and C are not row equivalent [[Pasted image 20230822083132.png]]

$$\left(\begin{array}{c|c} A \mid \vec{b} \end{array} \right) = \left(\begin{array}{c|c} 1 & 1 \mid 1 \\ 0 & 1 \mid 1 \end{array} \right)$$

$$\left(\begin{array}{c|c} A \mid \vec{b} \end{array} \right) = \left(\begin{array}{c|c} 1 & 0 \mid 0 \\ 0 & 1 \mid 1 \end{array} \right)$$

So A and \vec{b} are consistent. A and C are not consistent.